



# APPENDIX *N1*

## WETLAND DELINEATION REPORT QUEENS, NEW YORK

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<b>Abbreviations and Acronyms</b>	
<b>Acronym</b>	<b>Definition</b>
ac	acres
AGRE	Astoria Gateway for Renewable Energy
ASCE	American Society of Civil Engineers
Beacon Wind	Beacon Wind LLC
BOEM	Bureau of Ocean Energy Management
BW1	Beacon Wind 1
BW2	Beacon Wind 2
ConEd	Consolidated Edison of New York
COP	Construction and Operations Plan
CWA	Clean Water Act
D.O.	dissolved oxygen
FEMA	Federal Emergency Management Agency
FHA	Flood Hazard Area
ft	feet
GNSS	Global navigation satellite system
ha	hectares
HDD	Horizontal Directional Drilling
HTL	High Tide Line
ISO-NE	New England ISO
km	kilometers
kV	kilovolt
Lease Area	BOEM-designated Renewable Energy Lease Area OCS-A 0520
LOMR	Letter of Map Revision
mi	miles
MSL	mean sea level
NHD	National Hydrography Dataset
nm	nautical miles
NRCS	Natural Resource Conservation Service
NWI	National Wildlife Inventory
NYCRR	New York Code of Rules and Regulations
NY ISO	New York Independent System Operator
NYPA	New York Power Authority
NYSDEC	New York Department of Environmental Conservation
NYSERDA	New York State Energy Research and Development Authority
PCBs	polychlorinated biphenyls
POI	Point of Interconnection
TS	Trout Stocked
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

# Appendix N1. Wetland Delineation Report

## N1.1 Introduction

Beacon Wind LLC (Beacon Wind) proposes to construct and operate an offshore wind facility located in the designated Renewable Energy Lease Area OCS-A 0520 (Lease Area). The Lease Area covers approximately 128,811 acres (ac; 52,128 hectares [ha]) and is located approximately 20 statute miles (mi) (17 nautical miles [nm], 32 kilometers [km])<sup>1</sup> south of Nantucket, Massachusetts and 60 mi (52 nm, 97 km) east of Montauk, New York. (**Figure N1.1-1**).

Beacon Wind proposes to develop the entire Lease Area in two wind farms, known as Beacon Wind 1 (BW1) and Beacon Wind 2 (BW2) (collectively referred to hereafter as the Project). The individual wind farms within the Lease Area will be electrically isolated and independent from the other via transmission systems that connect two separate offshore substations to two onshore Points of Interconnection (POIs). However, if BW1 and BW2 both interconnect with the New York Independent System Operator (NY ISO), the Project will assess the possibility of cable linkage between BW1 and BW2. Each wind farm will gather power from the associated turbines to a central offshore substation and deliver the generated power via a submarine export cable to an onshore substation for final delivery into the local utility distribution system at the selected POI. The purpose of the Project is to generate renewable electricity from an offshore wind farm(s) located in the Lease Area. The Project addresses the need identified by northeast states to achieve offshore wind goals: New York (9,000 megawatts [MW]), Connecticut (2,000 MW), Rhode Island (up to 1,000 MW), and Massachusetts (5,600 MW).

BW1 will be developed first and constitutes the northern portion of the Lease Area. It covers approximately 56,535 ac ( 22,879 ha). The BW1 wind farm has a 25-year offtake agreement with the New York State Energy Research and Development Authority (NYSERDA) to deliver the power to its identified POI in Queens, NY.

BW2 spans the southern portion of the Lease Area and will be developed after BW1. It covers approximately 51,611 ac (20,886 ha). Beacon Wind is considering an Overlap Area of 20,665 ac (8,363 ha) that may be included in either wind farm. BW2 is being developed to address the need for renewable energy identified by states across the region, including New York, Massachusetts, Rhode Island, and Connecticut. The interconnectedness of the New England transmission system, managed by the New England ISO (ISO-NE), allows a single point of interconnection in the region to deliver offshore wind energy to all of the New England states (Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine). The magnitude of regional targets for offshore wind and the limited amount of developable area, given current and reasonably foreseeable BOEM leasing activity, demonstrates a need for full-build out of the Lease Area.

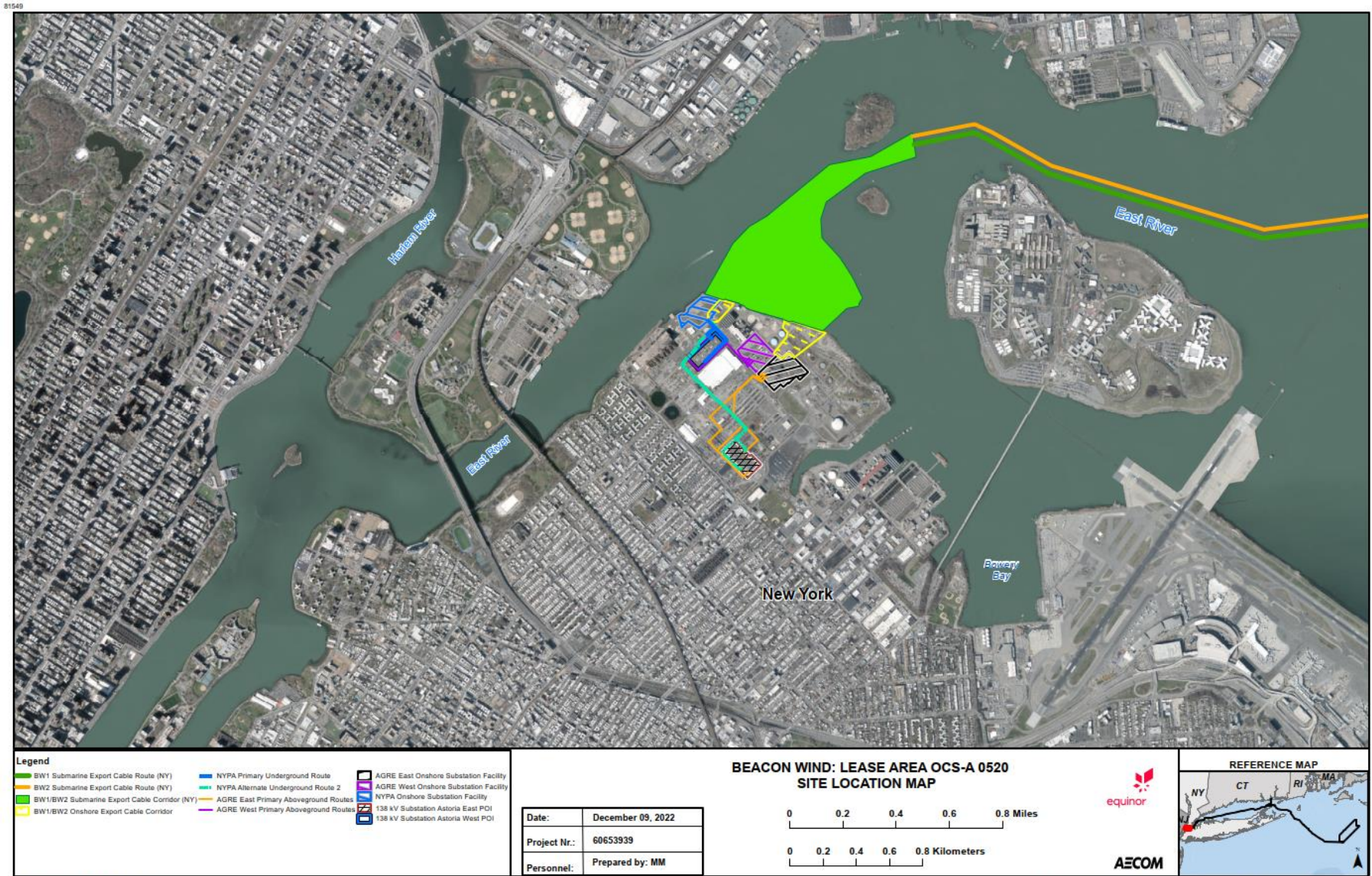
BW2 plans to deliver power to identified POIs either in Waterford, Connecticut or Queens, New York. Two locations are under consideration in Queens, New York for the single proposed BW1 landfall and onshore substation facility. These locations include the New York Power Authority (NYPA) site in the northeastern corner of the Astoria power complex and the Astoria Gateway for Renewable Energy (AGRE) site (which includes AGRE East and AGRE West) situated centrally and on the northern end complex adjacent to the East River, both collectively referred to hereafter as NYPA and AGRE. The Queens, New York, onshore substation facility sites that are not used (NYPA, AGRE East, or AGRE

West) for BW1 will remain under consideration, in addition to the Waterford, Connecticut, site, for the single proposed BW2 onshore substation facility.

The Bureau of Energy Management's (BOEM) sufficiency review and approval of the COP is contingent, in part, on the completion of wetland and waterbody delineations to identify and describe wetland and marsh species and habitats that may be disturbed by proposed activities and to ensure impact avoidance, minimization, and mitigation measures are implemented. The Project Area for this appendix consists of the Lease Area, submarine export cable route, and onshore Project facility locations including the onshore export and interconnection cables, and onshore substation facilities associated with BW1 and BW2.

This report discusses the wetland and waterbody delineation for the onshore portion of the Project Area, which includes two potential landfall locations, two parcels under consideration for the onshore substation facilities (including the converter station and substation), onshore export and interconnection cable routes, and proposed POIs, all located in Queens, New York (see **Figure N1.1-1**). Included in this report is a description of the onshore portion of the Project Area, including freshwater wetlands and waterbodies and tidal wetlands, methods used to delineate onsite wetlands, and information reviewed (concerning wetlands, soils, and listed species). For the purposes of this report, the Study Area will consist of the area of Queens, New York that contains the onshore Project Area and is bounded to the north and west by the East River, to the east by Luyster Creek, and to the south by 20<sup>th</sup> Avenue. Wetlands associated with some portions of the onshore Project Area where access was restricted will be field delineated as Project siting progresses.

FIGURE N1.1-1. STUDY AREA LOCATION MAP



## N1.2 Regulatory Framework

Freshwater wetlands in the State of New York are jointly regulated by both the New York State Department of Environmental Conservation (NYSDEC) and the USACE. Under Article 24 of the Environmental Conservation Law, commonly referred to as the Freshwater Wetlands Act, New York regulates freshwater wetlands greater than 12.4 ac (5.0 ha) or freshwater wetlands of any size that possess unique qualities, such as a documented presence of a threatened or endangered species. New York also regulates an adjacent area to New York jurisdictional wetlands, defined as those areas of land or water that are outside a freshwater wetland and within 100 feet (ft) (30 meter [m]) of the wetland boundary. NYSDEC assigns freshwater wetlands under its jurisdiction a classification value from 1 (highest) to 4 (lowest) based on the presence and degree of various characteristics that provide ecological, hydrological, pollution control, and/or other special benefits. Freshwater wetlands with higher classification values are afforded a higher level of protection. USACE regulates the wetlands protected by Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act, regardless of size.

Tidal wetlands in New York State are protected under Article 25 of the Environmental Conservation Law, known as the Tidal Wetlands Act. Under the Tidal Wetlands Act, New York regulates tidal wetlands and the associated adjacent areas. The following section introduces tidal wetland categories as regulated by the State of New York under 6 NYCRR Section 661.4(hh).

Tidal wetlands or wetland shall mean any lands delineated as tidal wetlands on an inventory map and shall comprise the following classifications as delineated on such map:

- (1) **Coastal Fresh Marsh** - The tidal wetland zone, designated FM on an inventory map, found primarily in the upper tidal limits of riverine systems where significant freshwater inflow dominates the tidal zone. Species normally associated with this zone include narrow leaved cattail, *Typha angustifolia* the tall brackish water cordgrasses, *Spartina pectinata* and/or *S. cynosuroides*; and the more typically emergent freshwater species such as arrow arum, *Peltandra*; pickerel weed, *Pondederia*; and cutgrass, *Leersia*.
- (2) **Intertidal Marsh** - The vegetated tidal wetland zone, designated IM on an inventory map, lying generally between average high and low tidal elevation. The predominant vegetation in this zone is low marsh cordgrass, *Spartina alterniflora*.
- (3) **Coastal Shoals, Bars and Flats** - The tidal wetland zone, designated SM on an inventory map, that (i) at high tide is covered by water, (ii) at low tide is exposed or is covered by water to a maximum depth of approximately one foot (0.3 m), and (iii) is not vegetated by low marsh cordgrass, *Spartina alterniflora*, except as otherwise determined in a specific case as provided in 6 NYCCR Section 661.16.
- (4) **Littoral Zone** - The tidal wetlands zone, designated LZ on an inventory map, that includes all lands under tidal waters which are not included in any other category, except as otherwise determined in a specific case as provided in 6 NYCCR Section 661.16. Provided, there shall be no littoral zone under waters deeper than six feet (1.8 m) at mean low water. Pending determination by the commissioner in a particular case, the most recent, as of the effective date of 6 NYCCR Section 661.16, National Ocean Survey maps published by the National Ocean Survey, National Oceanic and Atmospheric Administration shall be rebuttable presumptive evidence of such six-foot (1.8-m) depth.
- (5) **High Marsh or Salt Meadow** - The normal uppermost tidal wetland zone, designated HM on an inventory map, usually dominated by salt meadow grass, *Spartina patens*; and spike grass,

*Distichlis spicata*. This zone is periodically flooded by spring and storm tides and is often vegetated by low vigor, *Spartina alterniflora* and Seaside lavender, *Limonium carolinianum*. Upper limits of this zone often include black grass, *Juncus Gerardi*; chairmaker's rush, *Scirpus sp*; marsh elder, *Iva frutescens*; and groundsel bush, *Baccharis halimifolia*.

- (6) **Formerly Connected Tidal Wetlands** - The tidal wetlands zone, designated FC on an inventory map, in which normal tidal flow is restricted by man-made causes. Typical tidal wetland plant species may exist in such areas although they may be infiltrated with common reed, *Phragmites sp*. The tidal wetlands adjacent area is defined as the land adjacent to the wetland boundary to a maximum landward distance of 300 ft (91 m). In New York City, the maximum landward distance is within 150 ft (46 m) of the tidal wetland boundary. This maximum landward distance is reduced per Part 661.4 of the Act in the presence of a lawfully and presently existing structure greater than 100 ft (30 m) in length (including, but not limited to, paved streets and highways, railroads, bulkheads and sea walls, and rip-rap walls) or where an elevation reaches 10 ft (3 m) above MSL.

The tidal wetlands adjacent area is defined as the land adjacent to the wetland boundary to a maximum landward distance of 300 ft (91 m). In New York City, the maximum landward distance is within 150 ft (46 m) of the tidal wetland boundary. This maximum landward distance is reduced per Part 661.4 of the Tidal Wetlands Act in the presence of a lawfully and presently existing structure greater than 100 ft (30 m) in length (including, but not limited to, paved streets and highways, railroads, bulkheads and sea walls, and rip-rap walls) or where an elevation reaches 10 ft (3 m) above mean sea level (MSL).

According to Development Restrictions outlined in 6 NYCRR 661.6 (NYSDEC Tidal Wetlands Land Use Regulations), any new regulated activity on any tidal wetland or within any adjacent area shall be subject to a "minimum setback of all principal buildings and all other structures that are in excess of 100 ft<sup>2</sup> (9.3 m<sup>2</sup>) (other than boardwalks, shoreline promenades, docks, bulkheads, piers, wharves, pilings, dolphins, or boathouses and structures typically located on docks, piers or wharves) shall be 75 ft (22.9 m) landward from the most landward edge of any tidal wetland. Provided, however, within the boundaries of the city of New York the minimum setback required by this paragraph shall be 30 ft (9.1 m)".

Activities subject to regulation within wetlands and adjacent areas include any form of draining, dredging, or excavation, either directly or indirectly; and any form of dumping, depositing, or placement of fill of any kind, either directly or indirectly. This includes the installation of structures and roads, the driving of pilings, or the placement of any other obstructions (whether or not changing the ebb and flow of the water), and any form of pollution, including, but not limited to running a sewer outfall and discharging sewage treatment effluent or other liquid wastes into or so as to drain into a freshwater wetland. Applicants that propose such activities are required to demonstrate that impacts to these resources are avoided or minimized to the maximum extent practicable and that temporary impacts will be restored to pre-existing conditions following construction activities. Permanent impacts associated with these activities may be subject to compensatory mitigation.

Under Article 15 of the Environmental Conservation Law, New York regulates surface water resources by their best uses (fishing, source of drinking water, etc.; 6 NYCRR Part 701) or as Wild, Scenic and Recreational Rivers (6 NYCRR Part 666). State water quality classifications of freshwater watercourses fall into the following four categories based on the assigned best uses by NYSDEC:

- Classification AA or A: assigned to waters used as a source of drinking water;
- Classification B: primary and secondary contact recreation and fishing;



- Classification C: most suitable for fishing, suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes; and
- Classification D: suitable for fishing, waters will not support fish propagation, suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

State water quality classifications of tidal waterbodies fall into the following five categories based on the best uses assigned by NYSDEC:

- Classification SA: assigned to waters used for shellfishing for market purposes along with primary and secondary contact recreation and fishing;
- Classification SB: assigned to waters used for primary and secondary contact recreation and fishing;
- Classification SC: assigned to waters used for fishing and primary and secondary contact recreation, although other factors may limit the use for these purposes;
- Class I: assigned to waters used for secondary contact recreation and fishing. ; and
- Class SD: assigned to waters used for fishing. All of the defined water quality classifications are suitable for fish, shellfish, and wildlife propagation and survival. This classification may be given to those waters that, because of natural or man-made conditions, cannot meet the requirements for fish propagation.

Waters with classifications AA, A, B, and C may also have a standard of (T), indicating that it may support a trout population, or (TS), indicating that it may support trout spawning. Special requirements apply to sustain these waters that support these valuable and sensitive fisheries resources.

Temporary or permanent disturbances to the bed or bank of a stream with a classification of AA, A or B, or with a classification of C with a standard of (T) or (TS) requires a Protection of Waters Permit administered by the NYSDEC. This includes disturbance associated with the excavation or dredging associated with construction activities, the placement of fill for access, construction, or structure placement, and the installation of support piers. Stream banks are defined by NYSDEC as the land area immediately adjacent to, and which slopes toward, the bed of a watercourse and which is necessary to maintain the integrity of the watercourse. A bank will not be considered to extend more than 50 ft (15 m) horizontally from the mean high-water line unless where a generally uniform slope of 45 degrees (100 percent) or greater adjoins the bed of a watercourse. The bank is then extended to the crest of the slope or the first definable break in slope, either a natural or constructed (road, or railroad grade) feature lying generally parallel to the watercourse.

Development within floodplains in New York State is regulated by local municipalities (e.g., town, city, or village) that participate in the National Flood Insurance Program. Construction proposed within those areas of land covered by the floodwaters of the base flood, also known as Special Flood Hazard Areas (FHAs), is subject to floodplain development regulations and requires a floodplain development permit approved by the local administrator. Applicants for such a permit must demonstrate that the proposed development will not increase the surrounding flood hazard and that the development is constructed in a way that minimizes exposure to flooding. Permits must also include certification from a licensed professional engineer or architect that each structure is designed in accordance with the American Society of Civil Engineers (ASCE) standards for Flood Resistant Design and Construction (ASCE 24) and/or Minimum Design Loads for Buildings and Other Structures (ASCE 7). These standards set forth specific design requirements detailing elevation, building performance during flood

events, the use of flood damage-resistant materials, attendant utilities and equipment, and siting requirements.

The USACE also considers floodplain impacts under the Section 404 program by requiring compliance with Executive Order 11988 on Floodplain Management. The Federal Emergency Management Agency (FEMA) may also require formal reviews of actions in floodplains pursuant to the flood insurance program, such as a Letter of Map Revision (LOMR).

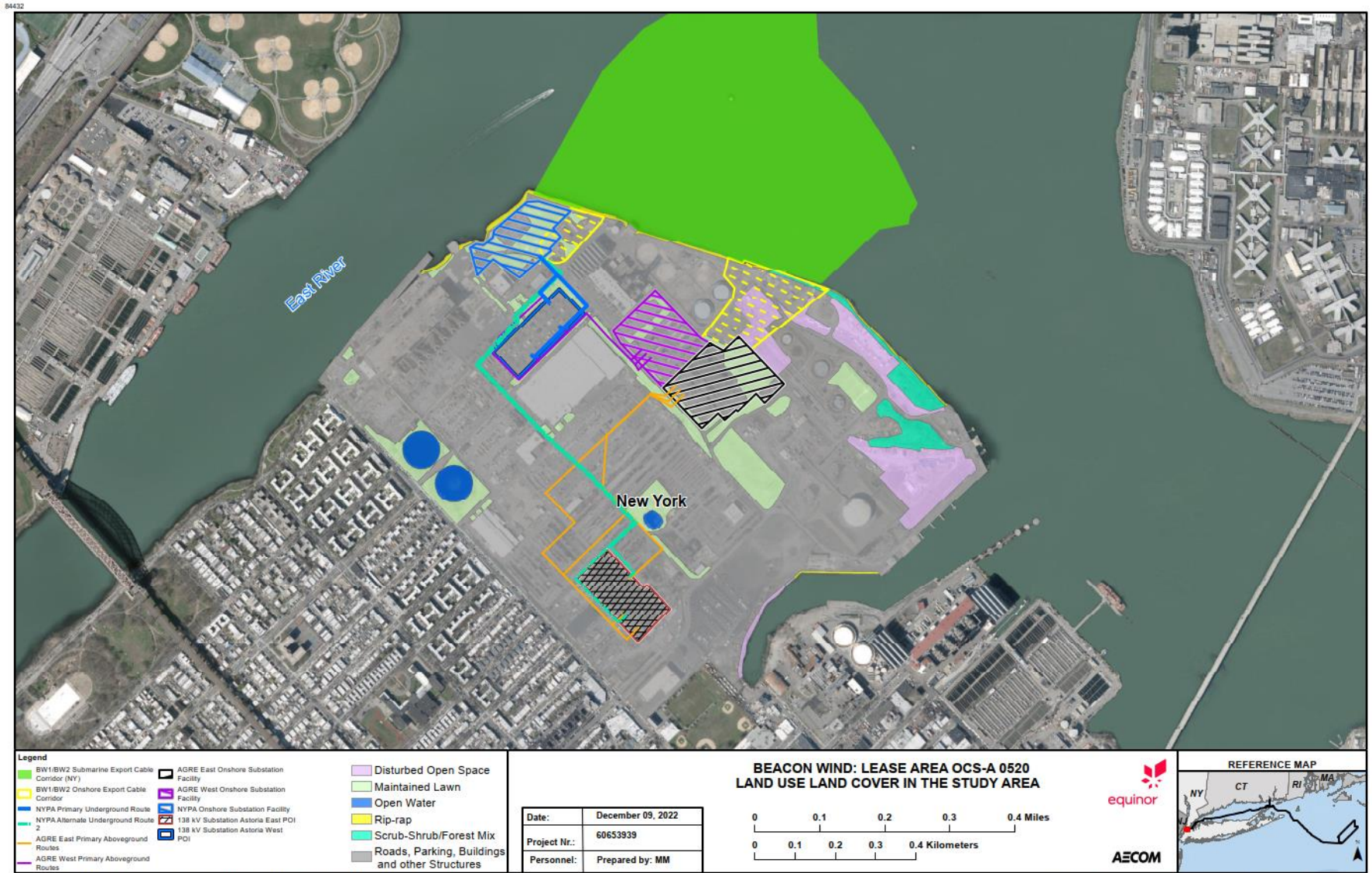
### N1.3 Study Area Description

The Study Area that was reviewed for this Project is approximately 295 ac (120 ha) in size. The Study Area includes potential landfall locations, onshore substation facilities (including the converter station and substation), onshore export and interconnection cable routes, and proposed POIs located within existing substations located in Queens, New York (**Figure N1.1-1**). The Study Area is bounded to the north and west by the East River, to the east by Luyster Creek, and to the south by 20<sup>th</sup> Avenue. The Study Area is densely developed with commercial and industrial properties including New York Power Authority (NYPA), Consolidated Edison of New York (ConEd) and Astoria Generating Co. This includes extensive impervious areas comprised by buildings, paved roads, and parking lots accounting for approximately 80 percent of the total area. The remaining land use includes some areas of maintained lawns (10 percent), disturbed open space (e.g., dirt parking lots, unpaved equipment storage yards; six percent) and semi-natural areas vegetated with shrubs and small trees (two percent). The shoreline areas adjacent to the East River and Luyster Creek consist primarily of concrete seawalls and rip-rap slopes (**Figure N1.3-1**). Total areas for the Study Area are provided in **Table N1.3-1**.

**TABLE N1.3-1. LAND USE COVER WITHIN THE WETLANDS AND WATERBODIES STUDY AREA**

Land Use	Area (ac)	Area (ha)
Roads, Parking, Buildings, and other Structures	237.1	96.0
Rip-rap	2.7	1.1
Maintained Lawn	29.0	11.7
Disturbed Open Space	17.1	6.9
Scrub-Shrub/Forest Mix	5.5	2.2
Open Water	3.8	1.5
<b>Grand Total</b>	<b>295.2</b>	<b>119.5</b>

FIGURE N1.3-1. LAND USE COVER IN STUDY AREA



Data Sources: BOEM, ESRI, NOAA, NGDA, Land Use Land Cover (2011 Edition, amended 2014), NYSDEC, 2021, 2020 Half-Foot 4 Band Long Island Zone NYC Aerial Ortho-Photography. Service Layer Credits: Source: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributions

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## **N1.4 Methods**

### **N1.4.1 Delineation of Wetlands and Waterbodies**

A preliminary wetland desktop analysis was conducted using existing information from federal and state resource agency databases. The analysis was conducted to assist in determining the potential location of wetland resources in the Study Area. The following resources were reviewed as part of the desktop analysis:

- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2021);
- Natural Resource Conservation Service (NRCS) soils mapping (NRCS 2021);
- NYSDEC:
  - Regulatory Freshwater Wetlands, Queens and Bronx Counties (NYSDEC 2013);
  - Tidal Wetlands (NYSDEC 2005); and
  - Water Quality Classifications (NYSDEC 2019);
- United States Geological Survey (USGS) National Hydrography Dataset (NHD) (USGS 2021);
- USGS topographic maps; and
- FEMA National Flood Hazard Layer (FEMA 2021).

AECOM biologists delineated wetlands in the Study Area using the routine methodology outlined in the *USACE Wetland Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (Version 2.0) (USACE 2012), and the *New York State Freshwater Wetlands Delineation Manual* (Browne 1995). The criteria used to delineate wetlands involve a field analysis of three parameters: vegetation, soils, and hydrology. These criteria and sampling protocol are described below. Initial boundaries of wetlands are established through visual assessment of vegetation and hydrology. Soils are assessed to determine the final boundary. For each plant community, sampling plots are established, and vegetation, soils, and hydrology are characterized. Wetlands were determined to be present if the sample plots exhibited the qualifying criteria of a dominance of hydrophytic (wetland) vegetation, hydric soils, and wetland hydrology. The wetland determination for difficult or problematic wetlands is made utilizing guidance in Section 5 of the Northcentral and Northeast Supplement (USACE 2012).

#### ***N.4.1.1 Vegetation***

For each sample plot, herbaceous, shrub/sapling, tree, and vine strata were characterized based on absolute plant cover, plant dominance and plant wetland indicator status. The percent cover by species was determined using a 5-ft (16-m) radius for the herbaceous layer, a 15-ft (4.6-m) radius for the shrub/sapling layer, and 30-ft (98-m) radius for the tree layer and vine layer. The wetland indicator status was determined for each dominant plant species based on the USACE National Wetland Plant List (Lichvar 2016). Wetland areas were assigned the appropriate wetland classification in accordance with the USFWS Wetland Classification System (Cowardin et al, 1979).

#### ***N.4.1.2 Soils***

Soil profiles are frequently inspected throughout the delineation process, in and around each potential wetland area, using a dutch auger to depths of 16 to 24 inches (41 to 61 cm). For data collection, soil

test pits are placed in an area of readily distinguishable wetland plant communities and the other in the adjacent uplands. The results of the soil testing are used to verify and document the boundary between wetlands and adjacent uplands. Soil profiles are inspected for the presence of hydric soil indicators as described in the USACE Northcentral and Northeast Regional Supplement. A Munsell Soil Color Chart (Munsell Color 1994) was used to define the soil hue, value and chroma of the samples from each test pit.

#### ***N.4.1.3 Wetland Boundary Data Collection***

Data collection completed in the field were surveyed using an Arrow 100 Global navigation satellite system (GNSS). This GNSS unit is capable of sub-foot accuracy.

## N1.5 Information Review

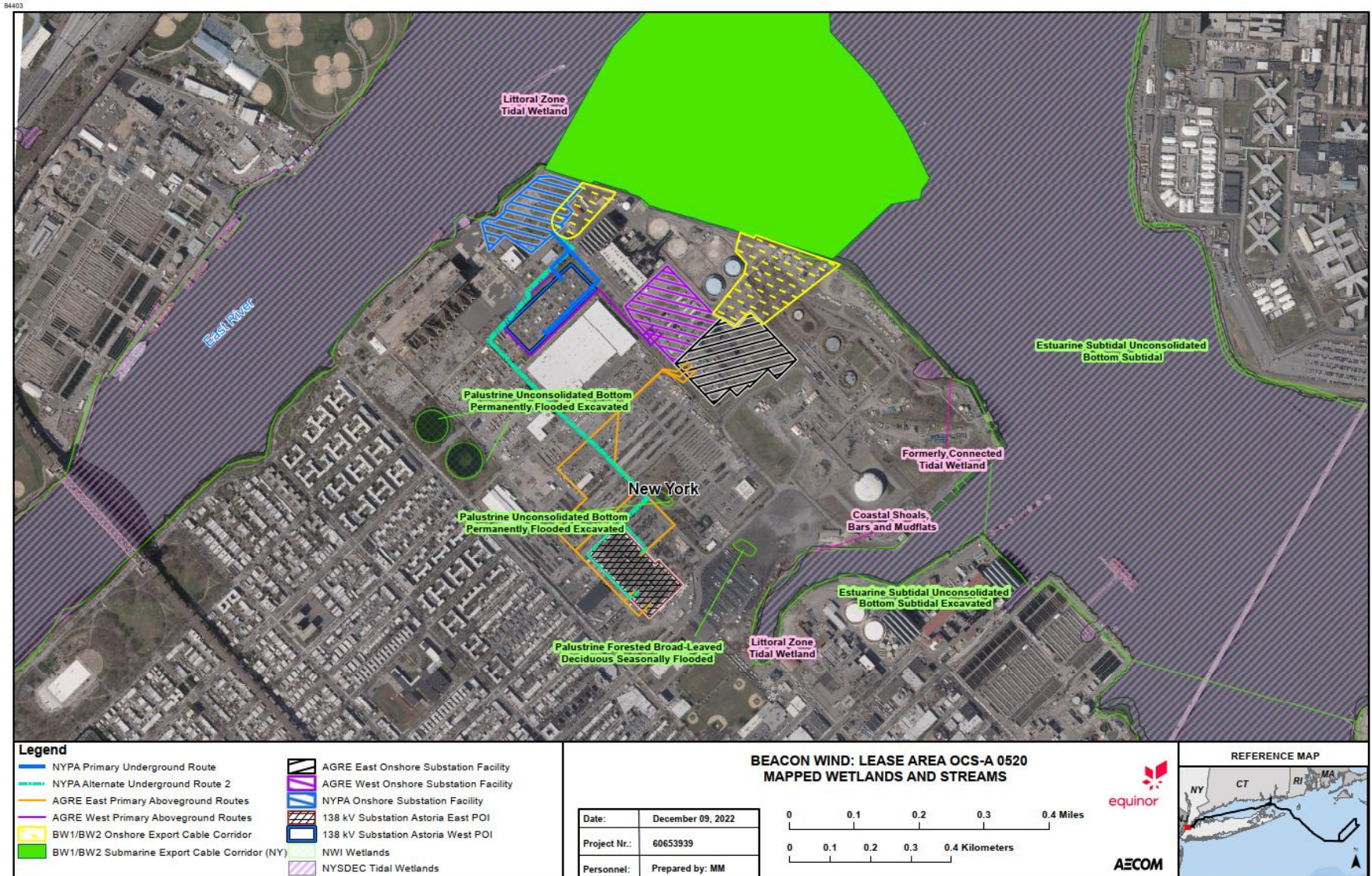
Potential landfall locations include NYPA, AGRE East, and AGRE West (**Figure N1.3-1**). Onshore export and interconnection cable routes between the onshore substation facilities under consideration and the 138-kilovolt (kV) substation, Astoria East POI and/or the 138-kV substation, Astoria West POI will be connected via underground electric transmission lines from NYPA to Astoria West POI and via aboveground transmission lines from AGRE East and AGRE West to both Astoria East and West POIs. Final locations for these routes are still being determined; however, the approximate location of proposed routes is presented in **Figure N1.3-1**. More specific details regarding potential landfall locations, onshore export routes and onshore substation facilities, under consideration, are provided below.

### N1.5.1 Mapped Wetlands

No freshwater wetland resource areas were identified within the Study Area during desktop review of NYSDEC Regulatory Freshwater Wetlands mapping or NRCS Soils data. However, two small potential wetland areas were identified within the Study Area through inspection of NWI maps and most recent aerial photographs (**Figure N1.5-1**).

One mapped wetland is an approximately 0.3-ac (0.1-ha) isolated wetland located on the east side of the Study Area that was mapped by the NWI as a Freshwater Forested/Shrub Wetland. Inspection of most recent aerial photography and field reviews of the Study Area conducted in May 2021 identified no jurisdictional freshwater wetland areas within this area. The other mapped wetland is an approximately 0.4-ac (0.16-ha) isolated wetland located in the central portion of the Study Area that was mapped by the NWI as a Freshwater Pond. This Freshwater Pond is situated approximately 715 ft (218 m) from the AGRE East and AGRE West site and more than 2,000 feet (610 m) from the NYPA site.

FIGURE N1.5-1. MAPPED WETLANDS AND STREAMS



Data Sources: BOEM, ESRI, NOAA, NYSDEC, 2021, 2020 Half-Foot 4 Band Long Island Zone NYC Aerial Ortho-Photography.  
Service Layer Credits: Source: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors

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Based on inspection of the NYSDEC tidal wetlands mapping, most of the East River adjacent to the Study Area is mapped as littoral zone. However, one area of coastal mudflats is mapped east of the Study Area and an approximately 0.9-ac (0.4-ha) area of formerly connected tidal wetland, in which normal tidal flow is restricted by man-made causes, is mapped in the northern portion of the Study Area. The formerly connected tidal wetland area was not field verified due to restricted access; however, based on interpretation of most recent aerial photography (2020) it does appear that there are onshore wetlands in the vicinity of the NYSDEC mapped area. These tidal systems are regulated under the Tidal Wetlands Act and assigned a protected adjacent area, as detailed in **Section N.2**. Limits of the adjacent area are discussed for the NYPA, AGRE East, and AGRE West sites.

No other freshwater wetland resource areas were identified along the onshore export cable interconnection routes or, on or near, the existing substations (Astoria East POI and/or Astoria West POI). Additional details for areas of the Project located from the intertidal zone landward for each of the potential landfall sites and onshore substation facility locations in Queens, New York are described further below.

### **N1.5.2 Surface Waterbodies**

Desktop review of NHD and NYSDEC resources revealed that no mapped waterbodies exist within the Study Area. However, the Study Area in Queens, New York is directly abutted by the East River with other tidal rivers including the Harlem River and Bronx River located northeast and northwest of the Study Area, respectively. Portions of the Harlem River are located within 1 mi (1.6 km) of the Study Area and the Bronx River is located approximately 2 mi (3.2 km) away. The nearest NHD mapped waterbody is the Hudson River (NHD reach code: 02030101005840), which is located approximately 3.7 miles (6 km) west of the Study Area. No other streams, ponds or lakes are identified.

The Study Area is located within the Northern Long Island Hydrologic Unit (NYSDEC HC02030201) and has a NYSDEC water quality classification for tidal waterbodies of Class I. Class I waters are assessed for general recreation use and support of aquatic life, but not for water supply or for public bathing use. Class I waters may also be impaired by polychlorinated biphenyls (PCBs), other pollutants (floatable debris) nutrients (nitrogen), low dissolved oxygen (D.O.), oil and grease coming from urban/storm runoff, combined sewer overflows, toxic/contaminated sediment, and municipal discharges.

According to the Environmental Resource Mapper (ERM 2021), there are no areas of imperiled mussels mapped on or adjacent to the Study Area; however, portions of the East River north and west of the Study Area are mapped as Important Areas for Diadromous Fishes.

### **N1.5.3 Watershed**

The Study Area is located within two watersheds; the Lower Hudson (HUC8 02030101) and the Bronx (HUC8 02030102) watersheds. The Lower Hudson watershed is approximately 480,000 ac (194,249 ha) and extends from the Upper Bay of New York City approximately 62 mi (99.8 km) northward into the southern limits of Dutchess County, New York and along the Connecticut border. The Bronx watershed is considerably smaller at approximately 120,512 ac (48,769 ha), extending approximately 30.8 mi (49.6 km) from Forest Park in New York City northward up into Westchester County, New York to the Connecticut border at Greenwich, Connecticut. The Study area is located near the southern limits of these two watersheds.

### N1.5.4 NRCS Soil Mapping

According to the United States Department of Agriculture (USDA) NRCS Web Soil Survey, four different soil mapping units have been identified within the Study Area (**Figure N1.5-2**). Each of these mapping units is associated with highly disturbed open space and urban land containing artificial fill materials overlying till, tidal marsh and reclaimed substratum. Fill materials range from well drained human-transported materials more than 40 in (100 cm) thick (Greenbelt soil series) to very deep well drained soils formed in a thick mantle of construction debris (e.g., asphalt, bricks, coal ash, and steel) intermingled with human transported soil materials (Laguardia and Secaucus soil series). The transported soil material in these situations is dominantly from locally excavated upland materials such as alluvium, till, outwash, or coastal plain sediments

No wetland or poorly drained soils are mapped within the Study Area. One area mapped as “Water” is located in the northeastern corner of the Study Area and is associated with what appears to be a concrete lined, former tertiary water treatment pond. No activities are currently proposed in the vicinity of this area.

### N1.5.5 FEMA Floodplains

FEMA data indicates that onshore portions of the Study Area are situated within Special FHAs, including Zone VE, Zone AE, and Zone X. These zones are described below: (FEMA 2021).

- Zone VE, also known as a Coastal High Hazard Area, is where wave action and fast-moving water can cause extensive damage during a base flood event. To address the added wave hazard in these areas, more stringent building practices are required in Zone VE, such as elevating a home or buildings on pilings so that waves can pass beneath it, or a prohibition to building on fill, which can be easily washed away by waves. These practices are intended to improve the chance of a home safely weathering a flood event;
- Zone AE areas are subject to inundation by the 1-percent-annual-chance flood event but not subject to high velocity wave action and are considered high risk flooding areas. Due to the higher risk of damage from waves to homes and other structures in the Coastal A Zone, FEMA encourages the practice of building to V Zone standards within this area. Many local building codes require that buildings in the Coastal A Zone be built to V Zone standards;
- Zone X is defined as moderate FHAs between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood; and
- Unshaded areas are those areas at minimal flood hazard risk.

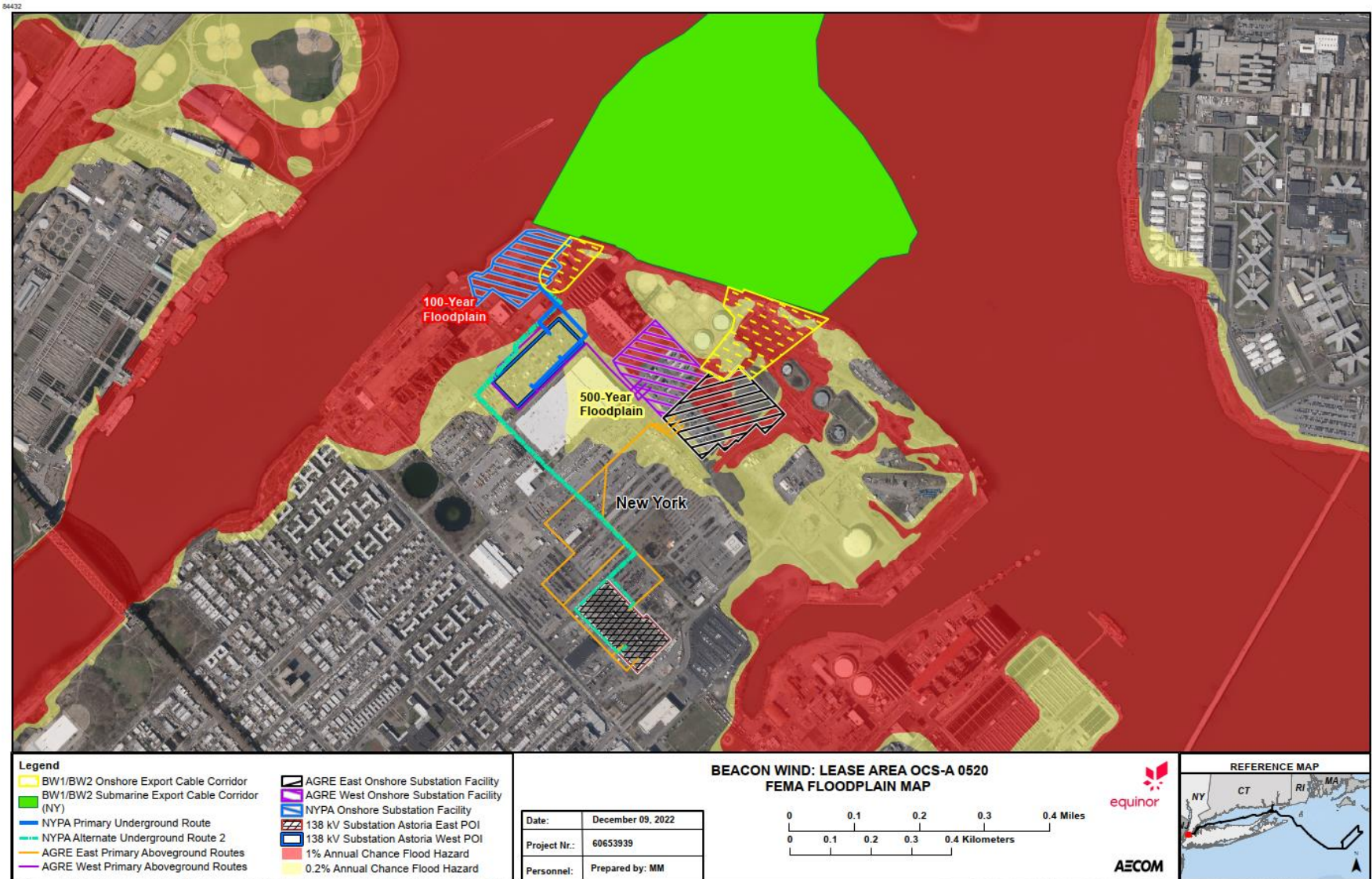
Mapped Special FHAs located on and proximal to the Study Area are identified on **Figure N1.5-3** and on **Table N1.5-1**.

**TABLE N1.5-1. FEMA-MAPPED SPECIAL FHAS WITHIN THE WETLANDS AND WATERBODIES STUDY AREA**

<b>Site</b>	<b>FEMA Flood Zone</b>	<b>Area (ac)</b>	<b>Percent Total Area</b>
NYPA	VE (Coastal Hazard Area)	0.35	5.66
	AE (1% Chance Annual)	5.80	94.34
	X (0.2% Chance Annual)	0.00	0.00
	<b>Total</b>	<b>6.80</b>	<b>100.00</b>
AGRE West	X (Area of minimal flood Hazard)	3.52	49.90
	AE (1% Chance Annual)	2.90	41.04
	X (0.2% Chance Annual)	0.64	9.06
	<b>Total</b>	<b>7.06</b>	<b>100.00</b>
AGRE East	X (Area of minimal flood Hazard)	3.77	42.53
	AE (1% Chance Annual)	4.17	47.01
	X (0.2% Chance Annual)	0.93	10.46
	<b>Total</b>	<b>8.87</b>	<b>100.00</b>



FIGURE N1.5-3. FEMA FLOODPLAIN MAP



Data Sources: BOEM, ESRI, NOAA, NYSDEC, 2021, 2020 Half-Foot 4 Band Long Island Zone NYC Aerial Ortho-Photography/FEMA, NFHL  
Service Layer Credits: Source: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors

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## N1.6 Field Survey Results

Where access permitted, a preliminary reconnaissance of the onshore portion of the Study Area including the onshore export and interconnection cable routes, both potential onshore substation facility locations (NYPA, AGRE East, and AGRE West), and the 138-kV substations (Astoria East POI and Astoria West POI) was conducted on May 17, 2021, to verify the presence of mapped wetland and waterbody resources identified during desktop analysis, and to assess the potential presence of unmapped wetland and waterbody resources. A site visit to delineate the AGRE East and AGRE West sites was conducted on September 15, 2022. As final selection of Project landfall locations, Project siting, and transmission routes are refined and are complete, additional field reviews and delineations will be conducted as necessary.

### N1.6.1 NYPA

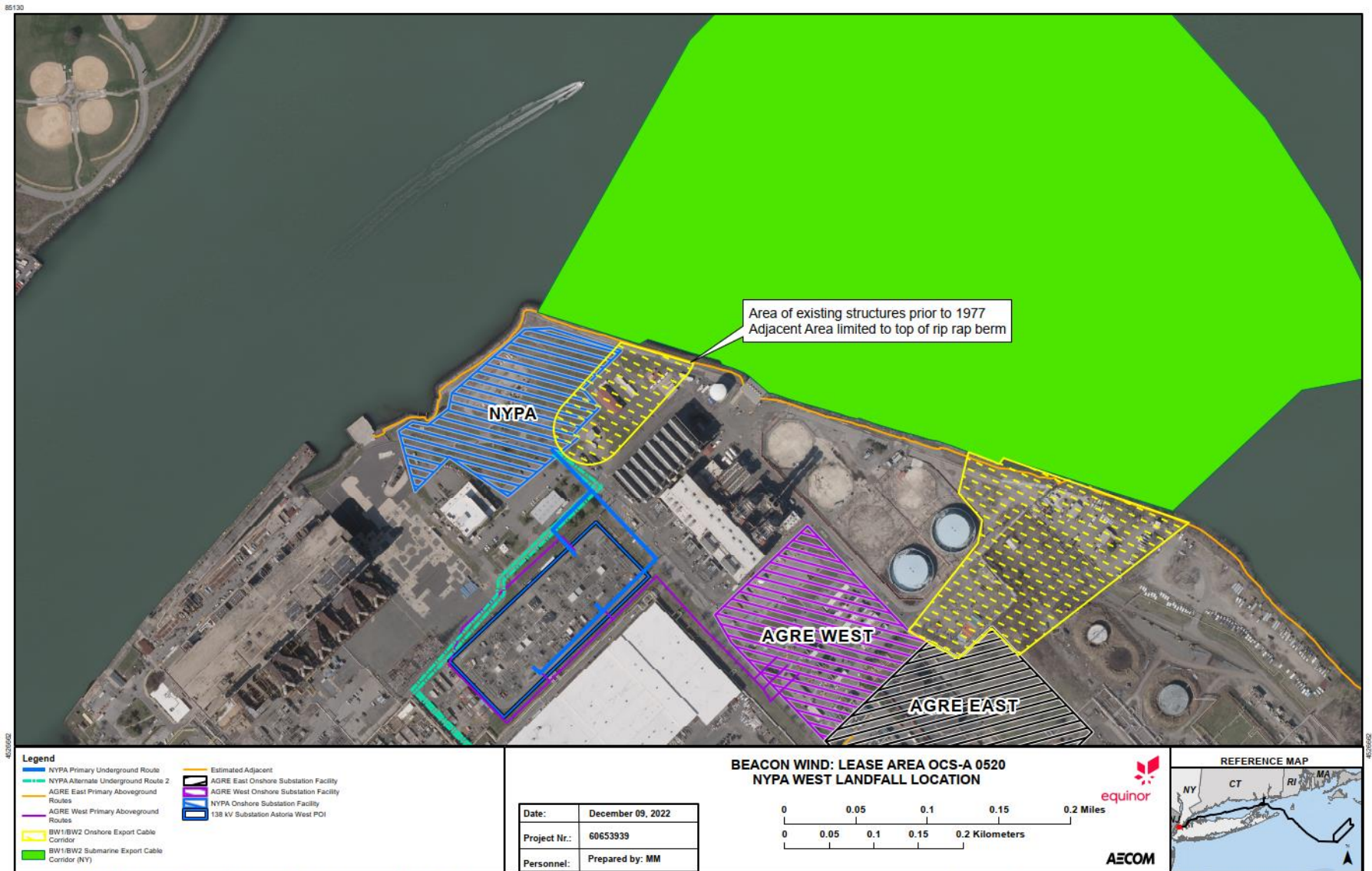
The NYPA site parcel is approximately 6.8 ac (2.8 ha) and located at the northwest corner of the Astoria power complex adjacent to Lawrence Point and the East River (**Figure N1.6-1**). The site contains a mosaic of paved impervious surfaces (concrete pads and bituminous concrete driveways and parking areas) with maintained lawn areas and a few scattered trees suggesting past commercial land use activities and development. However, several buildings are located along the southeastern limits of the site including storage sheds and a maintenance garage. The north and west perimeter of the site are bounded by the East River and a fenced security road. This site is only accessed via a security checkpoint where guard supervision is required by the property owner.

No federal or state jurisdictional freshwater wetlands or waterbodies were identified within the anticipated Project limits of this location during desktop review or field-based inspections. State regulated adjacent areas to tidal wetlands are subject to the application of complex NYSDEC tidal wetlands regulations (6 NYCRR Part 661.4), along with the apparent interpretation of these regulations by NYSDEC; however, aerial imagery taken on October 29, 1976 appears to show the existing rip-rap revetment in place at that time along the edge of the East River. This rip-rap revetment would likely qualify as a lawful, presently existing, functional, and substantial fabricated structure according to AECOM's interpretation of 6 NYCRR 661.4 (b) (1) (ii) and would likely limit the jurisdictional adjacent area to the most seaward edge of this rip-rap revetment (**Figure N1.6-1**).

The submarine export cable route is anticipated to make landfall via either trenchless (e.g., HDD, jack and bore, or micro-tunnel) or trenched (open cut trench) methods. Landfall will occur via trenchless or trenched methods that would extend from the onshore substation facilities at the NYPA site northward into the East River, terminating in a water depth of approximately 20 ft (6 m). If a trenchless method is utilized, nearshore work would be completed by utilizing a goal post pipe which marks and keeps the borehole in place. Goalposts are installed along the established nearshore alignment of the HDD with the intent to support the large diameter casing pipe during drilling operations. Proper installation of casing pipe nearshore aids in the containment of drilling fluid by facilitating an open flow pathway from the HDD exit location to the marine support equipment and to the fluid collection barge. Marine support is needed (e.g., vessels, barges, divers) to support HDD drilling operations. If HDD or other trenchless methods are used in this manner, it would avoid direct impacts to the intertidal zone located along the perimeter of the onshore portions of the Project Area.

Onshore export and interconnection cable routes will include 138 kV outgoing circuits from the onshore substation facilities to Astoria West POI, most likely as underground transmission lines. As previously mentioned, no wetland resource areas were identified on or near this connector route.

FIGURE N1.6-1. NYPA LANDFALL LOCATION



Data Sources: BOEM, ESRI, NOAA, NYSDEC. 2021. 2020 Half-Foot 4 Band Long Island Zone NYC Aerial Ortho-Photography.  
Service Layer Credits: Source: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributions

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### **N1.6.2 AGRE East and AGRE West**

The AGRE parcel (containing both AGRE East and AGRE West) is approximately 15.9 ac (6.4 ha) and located in the central portion of the Astoria power complex(**Figure N1.6-2**). As described above, field reviews of the site conducted in September 2022 identified no jurisdictional freshwater or tidal wetland areas within the boundaries of the AGRE site. Current conditions within the AGRE site are a mosaic of paved, concrete, gravel, maintained lawn with some areas of ornamental trees, constructed buildings, and bituminous concrete grind material surfaces.

No freshwater wetlands were identified onsite. Several portions of the AGRE site consist of impervious surfaces or vegetation on top of semi-impervious surfaces (such as gravel) which supports the growth of invasive facultative vegetation and ponding water. These areas were investigated during onsite reviews and determined to not qualify as jurisdictional wetlands or waterbodies under federal, state, or local regulations.

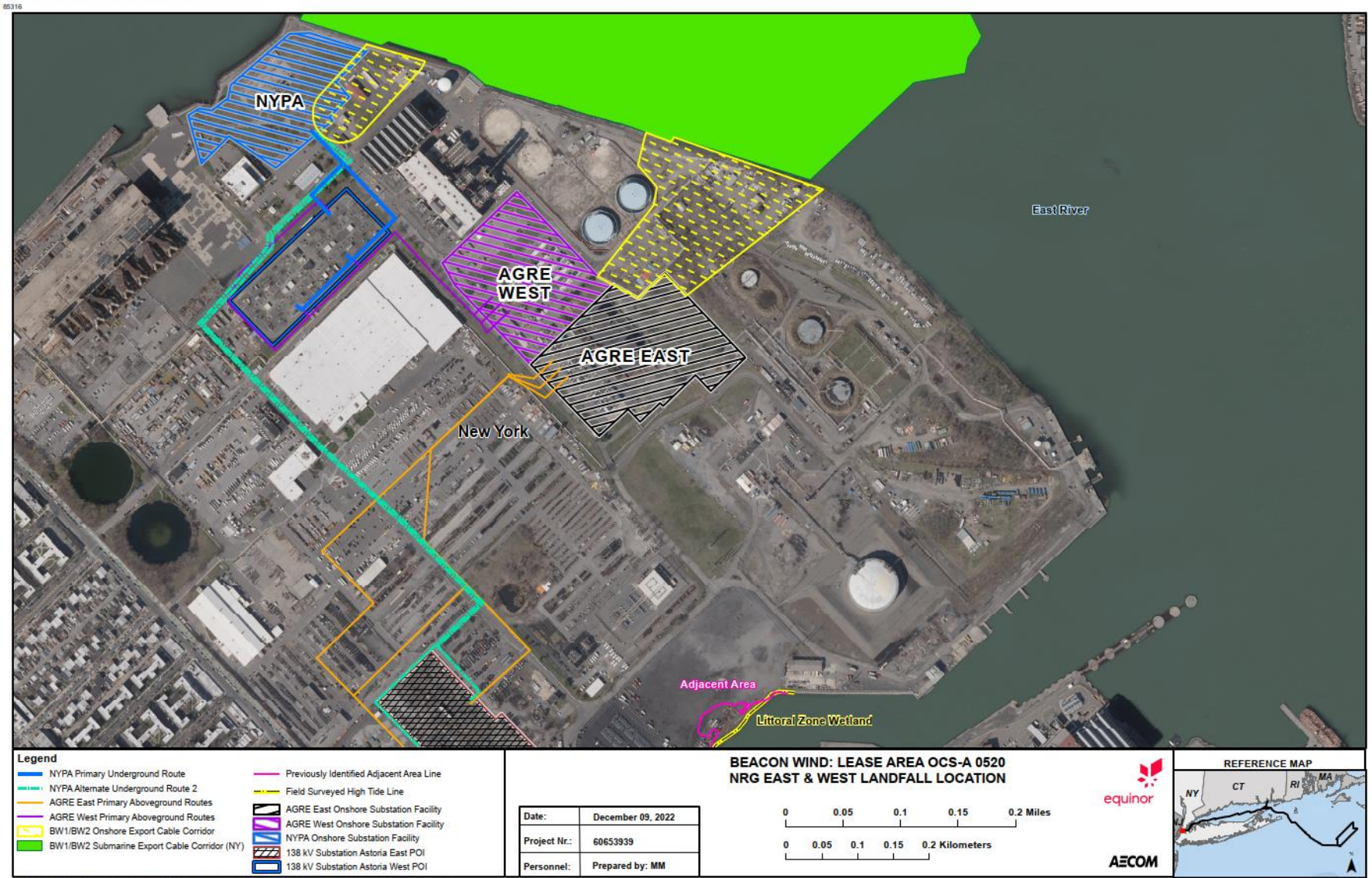
The AGRE site is located in the central portion of the Study Area, approximately 440 ft (134m) from the East River at its closest point. This distance places the AGRE site outside of most tidal regulations including adjacent area regulations. See **Figure N1.6-2** for a detailed mapping of the site.

The submarine export cable route is anticipated to make landfall to the AGRE site via trenchless methods (e.g., HDD, jack and bore, or micro-tunnel) that would extend from the onshore substation on the AGRE site northward into the East River, terminating in a water depth of approximately 20 ft (6 m). The HDD would utilize the same goalpost and casing pipe components as detailed above, to facilitate the drill and containment of drilling fluid. Utilizing a trenchless installation method will avoid or minimize the potential for direct impacts to the intertidal zone located along the perimeter of the Study Area.

Onshore export and interconnection cable routes will include 138 kV outgoing circuits from the onshore substation facilities to Astoria East POI and/or Astoria West POI as overhead transmission lines. As previously mentioned, no wetland resource areas were identified on or near these connector routes.



FIGURE N1.6-2. AGRE LANDFALL LOCATION



## **N1.7 Summary**

A wetland and waterbody investigation was conducted within an approximately 295 ac (120 ha) Study Area located in Queens, New York. The Study Area is located within a densely developed area with commercial and industrial properties, paved parking and roadways, and other structures. Approximately 80 percent of the Study Area consists of impervious surfaces with the remaining area dominated by maintained lawn and disturbed open space areas.

A preliminary desktop analysis was conducted using existing information from federal and state resource agency databases followed by field-based site inspections for the presence of wetlands, waterbodies, wildlife habitats, and other natural resources. No freshwater wetlands or waterbodies, tidal wetlands, or other natural resources were identified within the potential construction limits of either onshore substation facility location (NYPA or AGRE), along the onshore export and interconnection cable routes, or within the POIs (Astoria East POI and Astoria West POI).

The shoreline and intertidal zone for NYPA consists of an armored rip-rap revetment that extends from several feet above the high tide line down below the lower limits of the low tide line. No tidal wetlands (e.g., intertidal marsh, coastal shoals, bars, or mudflats) were observed. A coastal adjacent area will likely terminate at the top of the rip-rap.

The AGRE East and AGRE West sites, consist predominantly of developed areas of pavement, buildings, or maintained upland vegetation. No tidal or freshwater wetlands were observed onsite.

## N1.8 References

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